

REMARKS

By this Amendment, Applicants amend claims 1, 4, 5, 7, 10, 12, and 13 and cancel claims 8 and 9, without prejudice or disclaimer to the subject matter thereof. Applicants also add claims 14 and 15 to address other aspects of the present invention. Claims 1-7 and 10-15 are currently pending.

In the Office Action identified above, the Examiner rejected claims 1-3, 6, 7, and 10-13 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,654,374 to Fawaz et al. ("Fawaz") in view of U.S. Patent Application Publication No. 2002/0075875 to Dravida et al. ("Dravida") and further in view of U.S. Patent Application Publication No. 2002/0012348 to Mizuhara ("Mizuhara"); and rejected claims 4, 5, 8, and 9 under 35 U.S.C. § 103(a) as unpatentable over Fawaz in view of Dravida and Mizuhara and further in view of U.S. Patent No. 6,047,000 to Tsang et al. ("Tsang").¹ Applicants respectfully traverse the Examiner's rejections under § 103.

Regarding claim rejections under § 103

Applicants respectfully traverse the Examiner's rejection of claims 1-3, 6, 7, and 10-13 under 35 U.S.C. § 103(a) as unpatentable over Fawaz in view of Dravida and Mizuhara. No *prima facie* case of obviousness has been established.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. See M.P.E.P. § 2143.

Independent claim 1, as amended, recites a combination including, for example, “determining an accumulated bandwidth based on said predetermined amount of bandwidth; and processing said packet in the one of the plurality of queues based on said accumulated bandwidth and said size of said packet.” Fawaz fails to teach or suggest at least the above claim elements as recited in amended claim 1.

Fawaz discloses a method and apparatus for interconnection of packet switches with guaranteed bandwidth. “Upon arrival at a QoS Node 102, 106, packets (e.g., ethernet frames) are placed into an input buffer 302. Subsequently, classifier 304 classifies each packet in accordance with an SLA. . . . once an SLA has been identified for the packet using the various classification information, the packet is placed into a FIFO-type buffer 306-312 that corresponds to the SLA, forming a queue of packets for the SLA.” Fawaz, column 7, lines 29-54. “In addition, each QoS Node in some embodiments of the invention, can also implement an internal flow control. When the occupancy of an output buffer 317 (FIG. 6) exceeds a high threshold, the scheduler 316 marks the SLA’s that should be sent to that buffer as congested and skips those queues.” Fawaz, column 12, lines 18-23, emphasis added.

However, Fawaz’s teaching of using occupancy of the output buffer as the mark for congestion focuses on how fast the buffer can be emptied, i.e., the speed and rate of the transmission. Such teaching therefore does not constitute “determining an accumulated bandwidth based on said predetermined amount of bandwidth; and processing said packet in the one of the plurality of queues based on said accumulated

bandwidth and said size of said packet,” as recited in amended claim 1 (emphasis added).

Dravida fails to cure Fawaz’s deficiencies. Dravida discloses a broadband system with transmission scheduling and flow control. “Packet handling at a network element includes receiving packets on input links coupled to the network element, each packet having a quality of service (QoS) class indicating a service priority ranging from highest (1) to lowest (N). Received packets for each of the QoS classes from 1 to N-1 are stored in a common queue per QoS class while packets received for the lowest (N) QoS class are stored in link queues corresponding to the input links. The packets are transmitted from the common queues and the plural link queues to an output link according to a scheduling discipline.” Dravida, abstract, emphasis added.

However, Dravida fails to teach or suggest at least “processing said packet in the one of the plurality of queues based on said accumulated bandwidth of the flow and said size of said packet,” as recited in amended claim 1 (emphasis added). In fact, Dravida’s teaching of using a common queue teaches away from “processing said packet in the one of the plurality of queues based on said accumulated bandwidth and said size of said packet,” as recited in amended claim 1 (emphasis added).

Further, Mizuhara fails to cure the deficiencies of Fawaz and Dravida. Mizuhara discloses “a router device capable of using separated queues with arbitrary fineness and flexibly achieving assurance and separation of traffic.” Mizuhara, abstract. In Mizuhara, “[o]utput side bandwidth controller 8 performs scheduling with fixed priority in the order of the EF, AF1 to 4, and BE classes, with the use of the WRR for the AF1 to 4 classes. Output side bandwidth controller 8 instructs output side in-device cell buffer 6

to output in-device cell e including scheduled in-device cell header e1 to in-device packet controller 4.” Mizuhara, para. [90], emphasis added. However, Mizuhara’s teaching of using fixed priority to schedule ATM cells does not constitute “determining an accumulated bandwidth based on said predetermined amount of bandwidth; and processing said packet in the one of the plurality of queues based on said accumulated bandwidth and said size of said packet,” as recited in amended claim 1 (emphasis added).

Therefore, none of Fawaz, Dravida, and Mizuhara, taken alone or in any reasonable combination, teaches or suggests all elements of Applicants’ invention as recited in amended claim 1. A *prima facie* case of obviousness has not been established. Accordingly, Applicants respectfully request withdrawal of the Section 103 rejection of claim 1. Because claims 2, 3, 6, and 7 depend from claim 1, Applicants also request withdrawal of the Section 103 rejection of claims 2, 3, 6, and 7 for at least as being dependent from an allowable base claim.

Further, amended independent claims 10, 12, and 13, while of different scope, recite similar language to that of claim 1. Claims 10, 12, and 13 are therefore also allowable for at least the same reasons stated above. Applicants respectfully request withdrawal of the Section 103 rejection of claims 10, 12, and 13. Because claim 11 depends from claim 10, Applicants also request withdrawal of the Section 103 rejection of claim 11 for at least as being dependent from an allowable base claim.

Applicants also respectfully traverse the Examiner’s rejection of claims 4, 5, 8, and 9 under 35 U.S.C. § 103(a) as unpatentable over Fawaz in view of Dravida, Mizuhara, and further in view of Tsang. Because claims 8 and 9 have been canceled,

the Section 103 rejection of claims 8 and 9 is moot. Claims 4 and 5 depend from claim 1, either directly or indirectly.

As stated above, Fawaz, Dravida, and Mizuhara fail to teach or suggest at least “determining an accumulated bandwidth based on said predetermined amount of bandwidth; and processing said packet in the one of the plurality of queues based on said accumulated bandwidth and said size of said packet,” as recited in amended claim 1 and required by claims 4 and 5. Tsang fails to cure the deficiencies of Fawaz, Dravida's, and Mizuhara.

Tsang discloses a packet scheduling system “where the data packets are variable in size and wherein each input stream is allocated a share of the bandwidth of the output transmission link, the selecting means comprises means for determining the credit allocated to each input stream, the bandwidth allocated to each input stream, and the size of the head of line packets waiting to be transmitted in each input stream, and means for sorting the head-of-line packets in accordance with the difference between the size of the head of line packets and the allocated credit as a proportion of the allocated bandwidth, whereby the input stream having an allocated credit closest to the packet size as a proportion of allocated bandwidth is selected for transmission. Following transmission of a packet the credit for the transmitted input stream is reset to zero.” Tsang, column 2, lines 27-39, emphasis added.

However, Tsang's teaching of using closest allocated bandwidth does not constitute “determining an accumulated bandwidth based on said predetermined amount of bandwidth; and processing said packet in the one of the plurality of queues based on said accumulated bandwidth and said size of said packet,” as recited in

amended claim 1 (emphasis added). In fact, Tsang, by explicitly teaching that the credit is reset to zero after transmission, teaches away from “processing said packet in the one of the plurality of queues based on said accumulated bandwidth and said size of said packet,” as recited in amended claim 1 (emphasis added).

Therefore, none of Fawaz, Dravida, Mizuhara, and Tsang, taken alone or in any reasonable combination, teaches or suggests all elements of Applicants’ invention as recited in amended claim 1 and required by claims 4 and 5. Accordingly, claims 4 and 5 are allowable over Fawaz in view of Dravida, Mizuhara, and Tsang. Applicants respectfully request withdrawal of the Section 103 rejection of claims 4 and 5.

Regarding newly added claims

Applicants have added claims 14 and 15 to address other aspects of the present invention. Support for claims 14 and 15 may be found at, for example, pages 7-10 of the specification. At least because claims 14 and 15 depend from allowable base claim 1, claims 14 and 15 are also allowable. In addition, Applicants respectfully submit that the prior art of record does not teach or suggest, for example, “recalculating said accumulated bandwidth based on said residual bandwidth and said second predetermined amount of bandwidth,” as recited in claim 14, or “said accumulated bandwidth is recalculated as a summation of said residual bandwidth and said second predetermined amount of bandwidth,” as recited in claim 15.

Conclusion

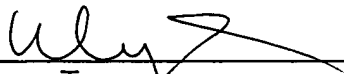
In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration of this application and the timely allowance of all pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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